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APPELLANTS' BRIEF PURSUANT TO 37 C.F.R. §1.192

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This brief, submitted in triplicate, is in furtherance of the Notice of Appeal filed on May 26, 2004. A check for the fee required under 37 C.F.R. §1.17(c) is enclosed.

I. REAL PARTY IN INTEREST (37 C.F.R. §1.192(c)(1))

The real party in interest in this application is the assignee, EMC Corporation (hereafter "EMC"), a Massachusetts corporation having a place of business at 35 Parkwood Drive, Hopkinton, MA 01748.

II. RELATED APPEALS AND INTERFERENCES (37 C.F.R. §1.192(c)(2))

There are no other appeals or interferences known to the Appellants, the Appellants' legal representative, or the assignee which will directly affect, be directly affected by, or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS (37 C.F.R. §1.192(c)(3))

There are 39 total claims in this application (9 independent claims and 30 dependent claims). The appealed claims are set forth in Appendix A. The following summarizes the status of the claims:

1. Claims pending and appealed: 1-39
2. Claims rejected: 1-23, 25-28, 30-34 and 36-39
3. Claims allowed: none
4. Claims withdrawn from consideration: 40-56
5. Claims canceled: 40-56

IV. STATUS OF AMENDMENTS (37 C.F.R. §1.192(c)(4))

An amendment was filed on May 26, 2004 after the date of the Final Office Action. The sole purpose for the amendment was to cancel claims 40-56, which had been withdrawn from consideration. At the time of submission of this brief, Appellant has not been provided with any indication that the amendment has been acted upon by the Examiner or entered.

V. SUMMARY OF INVENTION (37 C.F.R. §1.192(c)(5))

Embodiments of the present invention relate to techniques for duplicating computer backup data (specification, page 1, lines 1-2). Conventional computer systems typically include a backup storage device including one or more backup storage media, such as backup tapes, to backup important data stored on a client computer storage device. (specification, page 1, lines 5-8). Backup storage media are often shipped off-site or otherwise safeguarded to ensure that they retain their integrity and remain available in case client data needs to be restored. (specification, page 1, lines 8-10). It is possible, however, for backup storage media to be damaged or become corrupted. (specification, page 1, lines 10-11). To address this problem, some computer systems allow backup storage media to be duplicated. (specification, page 1, lines 12-13).

Using conventional techniques, backup data is duplicated using a process called "media duplication" through which an exact copy of the backup storage medium is made onto a corresponding duplicate backup storage medium. (specification, page 1, lines 13-16). The media duplication process duplicates a backup storage medium by sequentially reading raw backup data from the backup storage medium as a raw byte input stream and sequentially writing the raw backup data to the corresponding duplicate backup storage medium as a raw byte output stream, with each byte in the raw byte input stream being written to the raw byte output stream. (specification, page 4, lines 19-23).

The result of media duplication is that the duplicate backup storage medium contains all of the backup data stored on the corresponding backup storage medium. (specification, page 4, lines 24-26). In fact, the duplicate backup storage medium typically is an exact byte-for-byte

copy of the corresponding backup storage medium, differing possibly only in the arrangement of the backup data (e.g., bad sectors may be located in different locations) and in the content of a unique identifier for the media (e.g., a volume name). (specification, page 4, lines 26-30). In addition, each duplicate backup storage medium is required to be the same type of storage medium as the corresponding backup storage medium. (specification, page 4, lines 31-32).

When there are large amounts of client data and backup storage media is duplicated frequently, media duplication can require hundreds of backup tapes and many hours to perform. (specification, page 7, lines 1-3). In addition, since performing media duplication using conventional techniques involves duplicating all of the data on each backup storage medium to a corresponding duplicate backup storage medium, the process can be very time-consuming and expensive. (specification, page 7, lines 3-6).

One illustrative embodiment of the invention is directed to techniques for duplicating backup data on a backup storage medium by reading the data from the backup storage medium as a logical stream of data and writing the backup data to a duplicate backup storage medium as a logical stream of data. (specification, page 12, lines 13-17). Such duplication is referred to in the specification as "logical duplication" and provides numerous advantages over conventional media duplication in which backup data is duplicated by reading and writing it as raw byte streams. (specification, page 12, lines 17-20).

For example, in some situations it is desirable to duplicate only particular work items stored on a backup storage medium. (specification, page 12, lines 21-22). Using logical duplication techniques in accordance with one embodiment of the invention, particular work items may be duplicated by reading each as a logical data stream from a backup storage medium and writing each to a duplicate backup storage medium as a logical stream. (specification, page 12, lines 22-25). In this way, it is possible to duplicate only specific work items stored on a backup storage medium, which cannot be done using conventional media duplication, which requires that all work items on a particular backup storage medium be duplicated, even those for which duplication is not desired. (specification, page 12, lines 25-28).

Logical duplication increases the speed of duplication and allows desired work items on multiple backup storage media to be duplicated onto fewer duplicate backup storage media, saving both storage space and cost. (specification, page 12, line 27 – page 30, line 1). Another advantage of logical duplication is that it provides the ability to copy a work item that is interwoven with other work items on a backup storage medium to sequential storage locations on a duplicate backup storage medium, so that it may be restored more efficiently. (specification, page 13, lines 1-6).

Yet another advantage of logical duplication is that it allows different backup data (e.g., different work items) to be duplicated onto different types of backup storage media. (specification, page 13, lines 6-8). For example, an important work item (e.g., financial data) may be duplicated onto high-quality backup storage media, while a less important work item (e.g., e-mail) may be duplicated onto lower-quality backup storage media. (specification, page 13, lines 7-10). By contrast, media duplication is limited to duplicating all work items stored on a particular backup storage medium onto a single duplicate backup storage medium. (specification, page 13, lines 10- 13).

In another embodiment, selected backup data (e.g., selected work items) may be duplicated to a backup medium having a different property (e.g., backup media type or storage capacity) from the backup storage medium on which the backup data is stored. (specification, page 17, lines 6-9). Such mixed-media duplication was not possible using conventional media duplication techniques, which required that the backup storage medium and the duplicate backup storage medium be of the same type and size, so that raw data could be transferred between the two backup storage media. (specification, page 17, lines 9-12).

As discussed in more detail below, for the purposes of this appeal, the claims of the present application have been grouped into three groups, Group I including claims 1-19; Group II including claims 20-35 and Group III including claims 36-38. Each group relates to a different aspect of the ways in which the backup duplication techniques disclosed in the present application distinguish over conventional media duplication techniques. Specifically, Group I

relates to a technique for copying only a subset of backup data from a backup storage medium so that the duplicate backup storage medium is not an exact duplicate of the backup storage medium, Group II relates to the concept of reading backup data from a backup storage medium as a logical data stream and writing the data to a duplicate backup storage medium as a logical data stream, and Group III is directed to the concept of duplicating at least some backup data by copying it from a backup storage medium onto a duplicate backup storage medium of a different media type.

The foregoing Summary of the Invention is provided merely to assist the Board in appreciating various aspects of the present invention. However, all of the discussion in the summary does not apply to each of the independent claims on appeal, and the language of the independent claims may differ in material respects from the summary provided above. Thus, the Board is respectfully requested to give careful consideration to the language of each of the independent claims and to address each on its own merits, without relying on the summary provided above. In this respect, Appellants do not rely on the summary provided above to distinguish any of the claims of the present invention over the prior art, but rather, rely only upon the arguments presented below.

VI. ISSUES (37 C.F.R. §1.192(c)(6))

1. Whether claims 1-19 are unpatentable under 35 U.S.C. §103 as being obvious over U.S. Patent No. 5,778,395 (Whiting).
2. Whether claims 20-23 and 25-28 are unpatentable under 35 U.S.C. § 103 as being obvious over Whiting.
3. Whether claims 36-38 are unpatentable under 35 U.S.C. § 103 as being obvious over Whiting.

VII. GROUPINGS OF CLAIMS (37 C.F.R. §1.192(c)(7))

For each of the issues outlined below, there are groups of claims that can be considered to stand or fall together. It should be appreciated that such groupings are made solely for the

purposes of this appeal, and relate only to the specific rejections under which the groupings are made, such that the claims within a particular group may be separately patentable in other respects.

Issue 1

Claims 1-19 rejected in Issue 1 under 35 U.S.C. §103 as being obvious over Whiting can be considered to stand or fall together on the basis of that rejection.

Issue 2

Claims 20-23 and 25-28 rejected in Issue 2 under 35 U.S.C. §103 as being obvious over Whiting can be considered to stand or fall together on the basis of that rejection.

Issue 3

Claims 36-38 rejected in Issue 3 under 35 U.S.C. §103 as being obvious over Whiting can be considered to stand or fall together on the basis of that rejection.

VIII. ARGUMENT (37 C.F.R. §1.192(c)(8)(iv))

1. Claims 1-19 Are Not Unpatentable Under §103 As Being Obvious Over Whiting

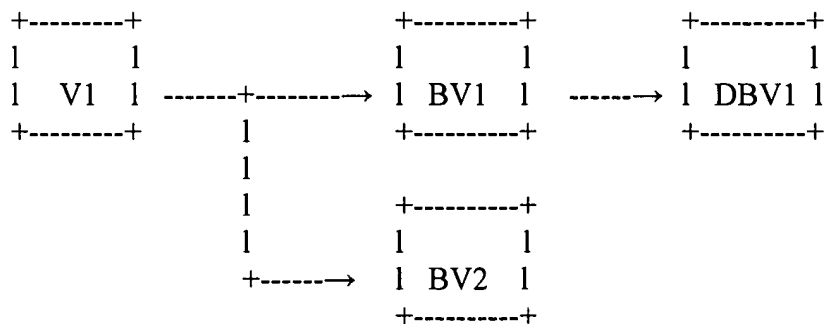
As mentioned above, the Group I claims include independent claims 1, 7 and 13, each of which relates to a concept of duplicating backup data stored on a backup storage medium by copying only a subset of the backup data onto a duplicate backup storage medium as duplicate backup data, so that the duplicate backup storage medium is not an exact duplicate of the backup storage medium.

A. Whiting Teaches Nothing Whatsoever Relating
to Duplicating Backup Data

Whiting is directed to a system for creating backups onto a backup storage medium. (see Abstract). Whiting discloses techniques for backing up data using disk space on a network file server as the backup storage medium. (col. 6, lines 21-23). However, contrary to the assertion in the Final Office Action, Whiting does not discuss making copies of the backup data stored on the backup storage medium. Thus, Whiting is entirely unrelated to the aspects of the present invention recited in claims 1-19.

The sections of Whiting cited in the Final Office Action as purportedly disclosing what is recited in the independent claims are the abstract and the description beginning at col. 5, line 7. The cited portion of the abstract refers to performing something analogous to an incremental backup, wherein after an initial backup of a particular volume is made, only changed portions are stored to the backup storage medium at later points in time. As with the rest of the disclosure in Whiting, this merely relates to techniques for creating backup data on a backup storage medium, and does not relate at all to making a duplicate copy of the backup data. Similarly, the disclosure at col. 5, line 7 of Whiting refers to techniques for identifying multiple copies of a file, such that only a single copy is “stored in the backup storage means.” (col. 5, lines 11-12). Again, this disclosure relates simply to the creation of backup data on a backup storage medium, and is entirely unrelated to creating duplicate backup data.

During prosecution, the undersigned spoke with the Examiner to discuss the fundamental differences between the duplication of backup data concept recited in the claims and the relied upon teachings of Whiting that are directed merely to creating backup data, and are entirely unrelated to the duplication of backup data. To highlight the distinction, a three-level abstraction was discussed that is summarized below. In this abstraction, the volume V1 represents a volume of data in a storage system.



Whiting is directed to the creation of backup data by copying at least some of the data from the volume V1 to a backup BV1 volume. The position taken by the Examiner in the Final Office Action is that Whiting teaches an incremental backup feature, wherein only portions of the data set that have changed since the previous backup (the previous backup being the creation of backup volume BV1) are stored on another backup medium. As Applicants pointed out throughout prosecution, this incremental backup feature relates to the creation of another backup volume (such as BV2), which, like the full back of volume BV1, is formed by reading data from the volume V1 and storing it on a backup storage media. This is supported by the disclosure in Whiting. For example, the abstract states: “only those files which have changed since the previous backup are actually read *from the volume* and stored on the backup storage means.” (Emphasis added).

As should be appreciated from the foregoing, Whiting relates to techniques for creating backup data by reading data from the volume V1 and storing it on a backup storage medium (e.g., BV1 or BV2). Conversely, claims 1-19 relate to the duplication of backup data, where data is copied from a backup storage medium (e.g., BV1) onto a duplicate backup storage medium such as DBV1. Whiting simply provides no teaching whatsoever about the duplication of backup data from a backup storage medium.

During prosecution, the Examiner questioned whether the claims were sufficiently broad to enable the recitation of duplicating backup storage data to be read upon creating multiple backup volumes (e.g., BV1 and BV2 in the example above) that provide backup copies of the volume

V1. While Applicants did not believe that this was the case, nevertheless, a clarifying amendment was made to highlight the distinction so that each of the independent claims clearly refers to copying the subset of backup data “from the at least one backup storage medium”.

- B. The Basis For The Alleged Modification To Whiting
Is Not Only Unsupported By Motivation In The Prior Art,
But Is Based On A Misunderstanding Of The Technology
And Would Result In A System That Simply Could Not
Work In The Manner Alleged In The Final Office Action

The Final Office Action concedes that Whiting does not “specifically teach copying/backing-up only a subset of the backup data *from the at least one backup storage medium*” as recited in claims 1-19. (Office Action, page 3) (Emphasis in original). However, the Final Office Action asserts that Whiting “clearly disclose” that the incremental backing up of only changed data from a previous backup “could have been happened from either (a) the original storage medium or (b) the back-up storage medium.” (Final Office Action, page 3). As Applicants explained during prosecution, to the extent that this portion of the Office Action asserts that Whiting discloses that the backing up of incrementally changed data could occur from a backup storage medium, Applicants strongly disagree. There is no such disclosure in Whiting, and there is simply nothing in the record to support the alleged modification. In addition, as discussed below, the technical aspects of performing an incremental backup make it impossible to perform that operation from the back up storage medium.

The Office Action asserts that Whiting does not specifically disclose where the comparison of data is made for determining changes in performing an incremental backup, concludes that one of ordinary skill in the art would have recognized that the incremental backup data could be copied from a backup storage medium, and asserts that doing so would yield a quicker response time because the backup medium could have a smaller data capacity than the original data source. (Final Office Action, page 3). Applicants disagree.

Applicants respectfully assert that the Final Office Action evidences a misunderstanding of the technical nature of an incremental backup. An incremental backup involves taking a full

backup of a particular data source at a given point in time, and then later backing up only the portions of the data source that have changed subsequent to the time when the initial backup was taken. Thus, by definition, the changed data is only found in the data set itself, and is not found on the original backup that was created of the data set. Therefore, an incremental backup simply can not be made by copying data from the previously backed up data set, as the very purpose for the incremental backup is to back up only information not included in the previously backed up data set.

A simple example illustrates the point. Assume that a volume of data was provided to store information for a computer system. At the end of a first day, two files have been written to the storage volume, i.e., file A and file B. At the end of that first day, a backup of the data volume can be made, and would include files A and B. During the next day, assume that an additional file C is written to the data volume, and that no changes are made to file A or B. At the end of the second day, an incremental backup can be performed on the data volume. The incremental backup will include only the changed pieces of data, so that it need not include either of files A or B, and can include only the newly-written file C. To create the incremental backup, the information relating to file C cannot be read from the backup copy that was made the previous day, as that previous backup included only files A and B, and could not possibly have included the data for file C, which was written to the data set only after the original backup copy was made. Therefore, to perform the incremental backup, the data relating to file C can only be obtained from the original data source.

C. No Prima Facie Case Of Obviousness Has Been
Established, And The Rejection Should Be Withdrawn

As should be appreciated from the foregoing, the assertion in the Office Action that one of ordinary skill in the art would have been motivated to perform the incremental backup of Whiting from a previous backup is not only unsupported by the prior art of record, but is simply incorrect, as it is technically impossible to do so. Thus, in view of fact that the Office Action

concedes that Whiting does not teach the copying or backing up of a subset of backup data from at least one backup storage medium, it is respectfully asserted that no prima facie case of obviousness has been established.

As should be appreciated from the foregoing, Whiting simply does not teach or suggest copying a subset of backup data from at least one backup storage medium onto a duplicate backup storage medium as recited in claims 1-19. Therefore, it is respectfully asserted that no prima facie case of obviousness has been established for these claims, and that the rejection of claims 1-19 under 35 U.S.C. §103 as being obvious over Whiting is improper and should be reversed.

2. Claims 20-23 And 25-29 Are Not Unpatentable Under
35 U.S.C. §103 As Being Obvious Over Whiting

As mentioned above, each of the claims in Group II relates to the concept of duplicating at least some of the backup data stored on a backup storage medium, the backup data including a first work item, by reading the backup data corresponding to the first work item from the backup storage medium as a logical data stream and writing the backup data to at least one duplicate backup storage medium as a logical data stream.

As discussed above and in the specification, such a process can be described as logical duplication, which enables a particular work item included in backup data stored on a backup storage medium to be duplicated by reading it and writing it as a logical data stream. (specification, page 12, lines 13-25). This provides an advantage over conventional duplication techniques for backup storage media in which all of the data stored on a backup storage medium must be duplicated in a transfer of raw byte information (specification, page 4, lines 19-23) without regard to any logical association of the bytes that form a particular work item.

The Final Office Action fails to even allege that Whiting teaches the reading of backup data or the writing of backup data to a duplicate backup storage medium as a logical data stream, and does not point to any portion of Whiting that purportedly teaches these limitations. Thus, it

is respectfully asserted that the Final Office Action fails to set forth a prima facie case of obviousness, such that the rejection should be reversed. MPEP §706.02(j).

In addition, as should be appreciated from the discussion above in connection with the claims in Group I, Whiting teaches absolutely nothing with respect to duplicating backup data, and therefore necessarily does not teach or suggest the specific technique of duplicating backup data by reading and writing backup data corresponding to a work item as a logical data stream. For the reasons discussed above, the rejection of the claims of Group II under §103 as purportedly being obvious over Whiting should be reversed.

3. Claims 36-38 Are Not Unpatentable Under 35 U.S.C. 103
As Being Obvious Over Whiting

The claims of Group III relate to the concept of copying at least some backup data from a first computer-readable backup storage medium to a second computer-readable backup storage medium of a different type.

As discussed above, conventional techniques for duplicating backup data were limited to media duplication in which duplicating backup data was limited to copying backup data onto a backup storage media of the same type and size as the backup storage media from which the data was being duplicated. (specification, page 17, lines 6-16).

The Final Office Action does not point to any specific section of Whiting that purportedly teaches the duplicating of backup data onto a duplicate backup storage medium of a different type. Thus, it is respectfully asserted that the Final Office Action fails to establish a prima facie case of obviousness, so that the rejection should be reversed. MPEP §706.02(j).

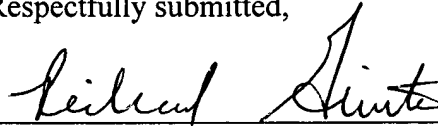
In addition, as should be appreciated from the discussion in connection with the claims in Group I, Whiting provides absolutely no teaching or suggestion relating to duplicating backup data by copying it onto a duplicate backup storage media of a different type.

For the reasons discussed above, the rejection of the claims of Group III under §103 as purportedly being obvious over Whiting should be reversed.

IX. CONCLUSION

For the foregoing reasons, the rejections of claims 1-23, 25-28, 30-34 and 36-38 under 35 U.S.C. §103 are improper and should be reversed.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Richard F. Giunta", is written over a horizontal line.

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Attorney Docket No.: E0295.70100US00
Dated: July 26, 2004



APPENDIX A

CLAIMS AS PENDING

1. (Previously Presented) In a computer system including a host computer, a storage device storing data for the host computer, and at least one computer-readable backup storage medium storing backup data copied from the storage device, a method for duplicating at least some of the backup data stored on the backup storage medium, the method comprising a step of:
 - (A) copying only a subset of the backup data from the at least one backup storage medium onto at least one computer-readable duplicate backup storage medium as duplicate backup data so that the duplicate backup storage medium is not an exact duplicate of the at least one backup storage medium.
2. (Original) The method of claim 1, wherein the backup data comprises a plurality of work items, and wherein the step (A) comprises a step of:

copying a subset of the plurality of work items onto the at least one duplicate backup storage medium.
3. (Original) The method of claim 1, wherein the step (A) includes a step of:
 - (A)(1) copying the subset of the backup data onto at least one duplicate backup storage medium having different properties than the at least one backup storage medium.
4. (Original) The method of claim 3, wherein the step (A)(1) comprises a step of copying the subset of the backup data onto at least one duplicate backup storage medium of a different type than the at least one backup storage medium.
5. (Original) The method of claim 1, further comprising a step of:
 - (B) storing, in a logical duplication database, a record indicating that the subset of the backup data copied in the step (A) has been copied to the at least one duplicate backup storage medium.

6. (Original) The method of claim 1, wherein the at least one backup storage medium comprises a first backup storage medium including incremental backup data for at least one work item at a first point in time and a second backup storage medium including incremental backup data for the at least one work item at a second point in time, and wherein the step (A) comprises a step of copying the first incremental backup data and the second incremental backup data onto a single duplicate backup storage medium.

7. (Previously Presented) A computer-readable medium encoded with a program for execution on a computer system including a host computer, a storage device storing data for the host computer, and at least one computer-readable backup storage medium storing backup data copied from the storage device, the program, when executed on the computer system, performs a method of duplicating at least some of the backup data stored on the backup storage medium, the method comprising a step of:

- (A) copying only a subset of the backup data from the at least one backup storage medium onto at least one computer-readable duplicate backup storage medium as duplicate backup data so that the duplicate backup storage medium is not an exact duplicate of the at least one backup storage medium.

8. (Original) The computer-readable medium of claim 7, wherein the backup data comprises a plurality of work items, and wherein the step (A) comprises a step of copying a subset of the plurality of work items onto the at least one duplicate backup storage medium.

9. (Original) The computer-readable medium of claim 7, wherein the step (A) includes a step of:

- (A)(1) copying the subset of the backup data onto at least one duplicate backup storage medium having different properties than the at least one backup storage medium.

10. (Original) The computer-readable medium of claim 9, wherein the step (A)(1) comprises a step of copying the subset of the backup data onto at least one duplicate backup storage medium of a different type than the at least one backup storage medium.

11. (Original) The computer-readable medium of claim 7, wherein the method further comprises a step of:

- (B) storing, in a logical duplication database, a record indicating that the subset of the backup data copied in the step (A) has been copied to the at least one duplicate backup storage medium.

12. (Original) The computer-readable medium of claim 7, wherein the at least one backup storage medium comprises a first backup storage medium including incremental backup data for at least one work item at a first point in time and a second backup storage medium including incremental backup data for the at least one work item at a second point in time, and wherein the step (A) comprises a step of copying the first incremental backup data and the second incremental backup data onto a single duplicate backup storage medium.

13. (Previously Presented) A backup server for use in a computer system including a host computer, a storage device storing data for the host computer, and at least one computer-readable backup storage medium storing backup data copied from the storage device, the backup server comprising:

a controller to control duplication of the backup data, the controller being adapted to copy only a subset of the backup data from the at least one backup storage medium onto at least one computer-readable duplicate backup storage medium as duplicate backup data, so that the duplicate backup storage medium is not an exact duplicate of the at least one backup storage medium.

14. (Original) The backup server of claim 13, wherein the controller comprises:
means for copying only a subset of the backup data onto at least one computer-readable duplicate backup storage medium as duplicate backup data, so that the duplicate backup storage medium is not an exact duplicate of the at least one backup storage medium.

15. (Original) The backup server of claim 13, wherein the backup data comprise a plurality of work items, and wherein the controller is adapted to copy a subset of the work items onto the at least one duplicate backup storage medium.

16. (Original) The backup server of claim 13, wherein the controller is adapted to copy the subset of the backup data onto at least one duplicate backup storage medium having different properties than the at least one backup storage medium.

17. (Original) The backup server of claim 16, wherein the controller is adapted to copy the subset of the backup data onto at least one duplicate backup storage medium of a different type than the at least one backup storage medium.

18. (Original) The backup server of claim 13, wherein the controller is adapted to store, in a logical duplication database, a record indicating that the subset of the backup data copied by the controller has been copied to the at least one duplicate backup storage medium.

19. (Original) The backup server of claim 13, wherein the at least one backup storage medium comprises a first backup storage medium including incremental backup data for at least one work item at a first point in time and a second backup storage medium including incremental backup data for the at least one work item at a second point in time, and wherein the controller is adapted to copy the first incremental backup data and the second incremental backup data onto a single duplicate backup storage medium.

20. (Original) In a computer system including a host computer, a storage device storing data for the host computer, and at least one computer-readable backup storage medium storing backup data copied from the storage device, the backup data including a first work item, a method for duplicating at least some of the backup data stored on the at least one backup storage medium, the method comprising steps of:

- (A) reading the backup data corresponding to the first work item from at least one backup storage medium as a logical data stream; and
- (B) writing the backup data read in the step (A) to at least one duplicate backup storage medium as a logical data stream.

21. (Original) The method of claim 20, wherein the first work item is stored on a single backup storage medium, wherein the backup data further includes a second work item stored in the single backup storage medium, and wherein the method includes a step of not duplicating the second work item onto the duplicate backup medium.

22. (Original) The method of claim 20, wherein the step (B) includes writing the backup data to at least one duplicate backup storage medium having different properties than the at least one backup storage medium read in the step (A).

23. (Original) The method of claim 20, further comprising a step of:

(C) storing, in a logical duplication database, a record indicating that the first work item has been copied to the at least one duplicate backup storage medium.

24. (Original) The method of claim 20, wherein the step (B) comprises steps of:

(B)(1) writing the backup data read in the step (A) to at least one first backup storage medium as a first logical data stream;

(B)(2) assigning a first expiration time to the at least one first backup storage medium;

(B)(3) writing the backup data read in the step (A) to at least one second backup storage medium as a second logical data stream; and

(B)(4) assigning a second expiration time that is different than the first expiration time to the at least one second backup storage medium.

25. (Original) A computer-readable medium encoded with a program for execution on a computer system including a host computer, a storage device storing data for the host computer, and at least one computer-readable backup storage medium storing backup data copied from the storage device, the backup data including a first work item, the program, when executed on the computer system, performs a method for duplicating at least some of the backup data stored on the backup storage medium, the method comprising steps of:

(A) reading the backup data corresponding to the first work item from at least one backup storage medium as a logical data stream; and

- (B) writing the backup data read in the step (A) to at least one duplicate backup storage medium as a logical data stream.

26. (Original) The computer-readable medium of claim 25, wherein the first work item is stored on a single backup storage medium, wherein the backup data further includes a second work item stored on the single backup storage medium, and wherein the method includes a step of not duplicating the second work item onto the duplicate backup medium.

27. (Original) The computer-readable medium of claim 25, wherein the step (B) includes writing the backup data to at least one duplicate backup storage medium having different properties than the at least one backup storage medium read in the step (A).

28. (Original) The computer-readable medium of claim 25, wherein the method further comprises a step of:

- (B) storing, in a logical duplication database, a record indicating that the first work item has been copied to the at least one duplicate backup storage medium.

29. (Original) The computer-readable medium of claim 25, wherein the step (B) comprises steps of:

- (B)(1) writing the backup data read in the step (A) to at least one first backup storage medium as a first logical data stream;
- (B)(2) assigning a first expiration time to the at least one first backup storage medium;
- (B)(3) writing the backup data read in the step (A) to at least one second backup storage medium as a second logical data stream; and
- (B)(4) assigning a second expiration time that is different than the first expiration time to the at least one second backup storage medium.

30. (Original) A backup server for use in a computer system including a host computer, a storage device storing data for the host computer, and at least one computer-readable backup storage medium storing backup data copied from the storage device, the backup data including a first work item, the backup server comprising:

a controller to control duplication of the backup data, the controller being adapted to read the backup data corresponding to the first work item from at least one backup storage medium as a logical data stream, and to write the backup data read by the controller to at least one duplicate backup storage medium as a logical data stream.

31. (Original) The backup server of claim 30, wherein the controller comprises:
means for reading the backup data corresponding to the first work item from at least one backup storage medium as a logical data stream; and
means for writing the backup data read by the controller to at least one duplicate backup storage medium as a logical data stream.

32. (Original) The backup server of claim 30, wherein the first work item is stored on a single backup storage medium, wherein the backup data further includes a second work item stored on the single backup storage medium, and wherein the controller is adapted to not duplicate the second work item onto the duplicate backup medium.

33. (Original) The backup server of claim 30, wherein the controller is adapted to write the backup data to at least one duplicate backup storage medium having different properties than the at least one backup storage medium read by the controller.

34. (Original) The backup server of claim 30, wherein the controller is adapted to store, in a logical duplication database, a record indicating that the first work item has been copied to the at least one duplicate backup storage medium.

35. (Original) The backup server of claim 30, wherein the controller is adapted to write the backup data read from the at least one backup storage medium to at least one first backup storage medium as a first logical data stream, assign a first expiration time to the at least one first backup storage medium, write the backup data read from the at least one backup storage medium to at least one second backup storage medium as a second logical data stream, and assign a second expiration time that is different than the first expiration time to the at least one second backup storage medium.

36. (Original) In a computer system including a host computer, a storage device storing data for the host computer, and a first computer-readable backup storage medium storing backup data copied from the storage device, wherein the first computer-readable backup storage medium is of a first type, a method for duplicating at least some of the backup data stored on the first computer-readable backup storage medium, the method comprising a step of:

- (A) copying at least some of the backup data from the first computer-readable backup storage medium to a second computer-readable backup storage medium of a second type that differs from the first type.

37. (Original) A computer-readable medium encoded with a program for execution on a computer system including a host computer, a storage device storing data for the host computer, and a first computer-readable backup storage medium storing backup data copied from the storage device, wherein the first computer-readable backup storage medium is of a first type, the program, when executed on the computer system, performs a method for duplicating at least some of the backup data stored on the first computer-readable backup storage medium, the method comprising a step of:

- (A) copying at least some of the backup data from the first computer-readable backup storage medium to a second computer-readable backup storage medium of a second type that differs from the first type.

38. (Original) A backup server for use in a computer system including a host computer, a storage device storing data for the host computer, and a first computer-readable backup storage medium storing backup data copied from the storage device, wherein the first computer-readable backup storage medium is of a first type, the backup server comprising:

a controller to control duplication of the backup data, the controller being adapted to copy at least some of the backup data from the first computer-readable backup storage medium to a second computer-readable backup storage medium of a second type that differs from the first type.

- 39. (Original) The backup server of claim 38, wherein the controller comprises:

means for copying at least some of the backup data from at least one computer-readable backup storage medium of a first type to at least one computer-readable backup storage medium having a second type that differs from the first type.

40.-56. (Canceled).



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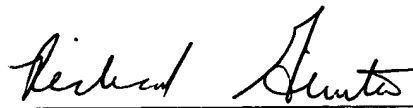
Transmitted herewith are the following documents:

- ☒ Appeal Brief in triplicate
- ☒ Return Receipt Postcard

If the enclosed papers are considered incomplete, the Mail Room and/or the Application Branch is respectfully requested to contact the undersigned at (617) 720-3500, Boston, Massachusetts.

A check in the amount of \$330.00 is enclosed. If the fee is insufficient, the Commissioner is hereby authorized to charge Deposit Account No. 23/2825. A duplicate of this sheet is enclosed.

Respectfully submitted,
Edgar St. Pierre et al., Applicant

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